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10/797,255	03/10/2004	Brian P. Roarty		5375

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EXAMINER	
BOYD, ERIN M	

ART UNIT	PAPER NUMBER
3663	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/797,255

Applicant(s)

ROARTY, BRIAN P.

Examiner

Erin M. Boyd

Art Unit

3663

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 May 2009.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
4a) Of the above claim(s) 1-3 and 11-23 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 4-10 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 10 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/S508)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Claims 1-3 and 11-23 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 5/6/2009.

2. Applicant's traverse of the restriction (election) requirement in the reply filed on 5/6/2009 is acknowledged. The traversal is on the ground(s) that Claim 11, drawn to the non-elected invention (species), is dependent on Claim 4, which is drawn to the elected invention (species). This is not found persuasive because, regardless of claim dependency, Applicant elected the species of figure 6. Claim 11 is not drawn to figure 6, but is instead drawn to the species of figures 2A/2B, which Applicant did not elect.

Applicant has amended Claims 11 and 12 in an attempt to read said claims on the elected species of figure 6. Applicant amends said claims such that an insulating and heat transference block is recited instead of the third block of insulation, as previously recited. Applicant argues that the disclosure does not prevent the heat transference block 19 from also being an insulating material (Remarks; page 3, paragraph 3, lines 2-4). However, the original disclosure does not enable an "insulating and heat transference block". The original disclosure does, however, enable an insulating block 23 and a heat transference block 19. The original disclosure also does

not enable the heat transference block being capable of insulating. Based specifically on amended claim 11, Examiner is not sure whether to read the "insulating and heat transference block" on the insulating block 23 or the heat transference block 23. However, based on the amended claim 12, subsequent claims, the drawings, and the specification, Examiner interprets the "insulating and heat transference block to be the insulating material 23 (shown in figures 2A/2B). In support of this conclusion, amended claim 12 states that the insulating and heat transference block comprises a first of electrical insulating material and a second sub-layer of thermal insulating material. The specification (page 8, paragraph 2) and the drawings (figures 2A, 2B, and 6) disclose that the insulating block 23, not the heat transference block 19, includes said sub-layers. Furthermore, claim 13 introduces the heat transference block 19; thus the insulating and heat transference block of claim 11 is must be a separate and different entity.

Thus, since the "insulating and heat transference block" is understood to be the "insulating material 23" and figure 6 does not include said insulating material, Claims 11-23 are not drawn to the elected species of figure 6. Rather, Claim 11 and 12 read on the non-elected species of figures 2A and 2B.

The requirement is still deemed proper and is therefore made FINAL.

Response to Amendment

3. The affidavit under 37 CFR 1.132 filed 5/6/2009 is insufficient to overcome the rejection of claims 4-10 based upon lack of enablement and lack of utility as set forth in

the last Office action. Examiner addresses the assertions in the affidavit, in addition to the Remarks submitted on 5/6/2009, in the response to arguments section below.

Response to Arguments

4. Applicant's arguments filed 5/6/2009 have been fully considered but they are not persuasive.

5. Applicant argues on page 4; paragraph 5, lines 11-12 on the Remarks that his attempt is not to provide a method for attaining low energy neutron reaction (LENR), rather he is seeking to patent an application of LENR.

In response, Examiner asserts that applicant's asserted application is not useful, in the meaning of patent law, if the phenomena on which the application is based (i.e. LENR) is inoperative (See e.g. *Newman v. Quigg*, 877 F.2d 1575, 1581, 11 USPQ2d 1340, 1345 (Fed. Cir. 1989), *In re Harwood*, 390 F.2d 985, 989, 156 USPQ 673, 676 (CCPA 1968). Without achieving LENR, the claimed device is totally incapable of achieving a useful result (i.e. lack utility).

Thus, the reality (or lack thereof) of LENR is central to the patentability of Applicant's invention. It is apparent from the specification that applicant's concept of obtaining an operative LENR system is actually based on a cold fusion / nuclear reaction system and is workable or operative only if said cold fusion systems are already operative. Furthermore, there is no reputable evidence of record to support the assumption and speculation that the invention would actually operate as indicated.

6. Applicant argues on page 5; paragraph 3 as follows:

Applicant is not required to provide; let alone prove, either a theoretical foundation or existence of general knowledge and acceptance of a concurrently unfolding scientific advance underlying his invention; he is only required to prove "patentable utility".

In response, Applicant has, at best, set forth what may be considered a concept or an object of scientific research. However, it has been held that such does not present a utility within the meaning of 35 U.S.C. 101. See Brenner v. Manson, 148 U. S. P. Q. 689. Additionally, it is well established that where the utility of the claimed invention is based upon allegations that border on the incredible or allegations that would not be readily accepted by a substantial portion of the scientific community (note the documents relied on by the examiner in previous office action and below), sufficient substantiating evidence of operability must be submitted by applicant. Note In re Houghton, 167 USPQ 687 (CCPA 1970); In re Ferens, 163 USPQ 609 (CCPA 1969); Puharich v. Brenner, 162 USPQ 136 (CADA 1969); In re Pottier, 152 USPQ 407 (CCPA 1967); In re Ruskin, 148 USPQ 221 (CCPA 1996); In re Citron, 139 USPQ 516 (CCPA 1963); and In re Novak, 134 USPQ 335 (CCPA'1962).

7. Applicant continues to argue as follows:

Applicant asserts first, that the present (2009) state of the art removes the 2004 DOE Report's objections to LENR, and secondly, that the U.S. Patent Office should sensibly leave proof of operability to the real world. Neither the PTO nor its staff are required to certify that any invention is operable; and, according to the state of the art of 2009, the assertion adopted from the outdated DOE Report, that "the disclosed invention is presently considered to be inoperable", can no longer be sustained in light of subsequent.

As of current, LENR (cold fusion) is not readily accepted by a substantial portion of the scientific community. Neither the recent 60 Minutes news story on television nor validation of cold fusion by its proponents are proof that the state of cold fusion has changed significantly since 2004, as asserted by Applicant. Furthermore, they do not render the 2004 DOE report moot because they do not definitively refute the objections of the report's reviewers.

Further evidence that the state of cold fusion has not changed significantly in the past 5 years is the recent (3/23/2009) BBC News article (attached). In the article Frank Close, a professor of theoretical physics at the University of Oxford, states that cold fusion results from studies are still not being independently verified and that inexplicable phenomena encountered in the last twenty years are being labeled as "cold fusion" even if they aren't, in order to attract attention from journalists. Twenty years have passed since the initial introduction of cold fusion and Dr. Close asserts that "nothing's really changed in [those] 20 years".

8. Applicant argues on page 7; paragraph 2 of Remarks that

The applicant is not and cannot be required to provide any explanation of "how the indirect excitation means functions to enable LENR" - not, that is, to any extent that the word "how" is read to mean requiring a theoretical explanation. Inventors never need to provide a theoretical explanation and are entitled to an invention even if their theoretical explanation is not just incomplete or missing, but even wrong.

Again, it is well established that where the utility of the claimed invention is based upon allegations that border on the incredible or allegations that would not be readily accepted by a substantial portion of the scientific community (note the documents relied

on by the examiner in previous office action and below), sufficient substantiating evidence of operability must be submitted by applicant. Examiner has previously listed many cold fusion systems that have not obtained positive results. Applicant asserts that he has succeeded where others have failed. Thus, there must be some critical feature of applicant's invention that enables his system to produce actual, positive results. Said critical feature must be clearly specified and explained so as to enable an artisan to make and use the invention as required by statute.

It is possible that applicant's invention produces the disclosed heat production, but applicant has not sufficiently supported his assertion that said heat production is "excess heat". The term "excess heat" is a conventional term used in this art when referring to heat produced from a cold fusion nuclear reaction. Examiner's question of "how the indirect excitation means functions to enable LENR" is related to how Applicant knows that the indirect excitation means enables LENR rather than some other means of heat production.

Regarding excess heat, there is no reputable evidence to support the allegation or claim of excess heat production. First of all, applicant provides no assessment or indication of experimental error. There are numerous documents showing how errors can arise in the detection of heat in cold fusion systems and that such errors can lead one to the erroneous conclusion that excess heat is being generated (and consequently, that nuclear fusion reactions are taking place). Buehler et al. note some of the problems that can occur in calorimetry and outlines some criteria for establishing calorimeter performance for definitive measurements of excess heat. It is incumbent

upon the applicant to show that the alleged result of excess heat is valid and not just the result of experimental errors or misinterpretation of experimental results. This is especially so when the invention is in a field wherein the scientific community in general considers the alleged "excess heat" to be erroneous.

9. Regarding the affidavit submitted 5/6/2009, it is noted that one cannot rely on the Remarks in a Response to an Office action (or affidavit) to provide subject matter that the specification itself must recite for definiteness and for completeness.

a.) Applicant asserts that the quantitative requirements as to the amount of heat (excess heat) necessary to cause the phase change of the fluid would follow Boyle's Law pertaining to the pressure/temperature conversion of liquid to gas phase. First of all, Boyle's Law relates to ideal gas and the ideal gas model tends to fail at lower temperatures or higher pressures, when intermolecular forces and molecular size become important. The specification does not disclose the temperature of the system. Secondly, the disclosure provides no value for the asserted amount of excess heat the system is capable of producing. Is the system capable of producing enough excess heat to cause a phase change of the (unidentified) fluid?

b.) – e.) It is Examiner's position that undue experimentation would be required to produce an operative embodiment of the applicant's invention. In fact, in section d), Applicant states that it is not clear how much the palladium is loaded with deuterium, or if it is loaded at all. Applicant has not disclosed the parameters of an operative nuclear fusion system which is capable of producing nuclear reactions or excess heat not how

to determine these requisite parameters. Documents of failed cold fusion experiments, previously documented by Examiner, are evidence that one of ordinary skill in the art does not know the parameters of an operative cold nuclear fusion system. One cannot rely on the skill in the art for the selection of the proper quantitative values to present an operative cold fusion system since those in the art do not know what these values would be. See *Bank v. Rauland Corp.*, 64 USPQ 93; *In re Corneil et al.*, 145 USQ 697.

It is considered that the Examiner (for the reasons set forth above) has set forth a reasonable and sufficient basis for challenging the adequacy of the disclosure. The statute requires the application itself to inform, not to direct other to find out for themselves; *In re Gardener et al.*, 166 USPQ 138, *In re Scarbrough*, 182 USPQ 298.

f.) Applicant asserts that LENR reproducibility is now in the public domain due to a 60 Minutes television special and various patent applications. Examiner disagrees. Positive results of cold nuclear fusion are difficult (many would argue impossible) to reproduce or duplicate. As to this issue of reproducibility, note the following comments by Huizenga (IV) under the heading Reproducibility:

"The foundation of science requires experimental results to be reproducible. Validation is an integral part of the scientific process. Scientists are obligated to write articles in ways that allow observations to be replicated. Instructions should be available to permit a competent and well-equipped scientist to perform the experiment and obtain essentially the same results. Replication in science usually is reserved for experiments of special importance or experiments that conflict with an accepted body of work. The greater the implication of an experimental result, the more quickly it will be checked by other scientists.

As more and more groups, at major universities and national laboratories were unable to replicate either the claimed excess heat or fusion products, proponents of cold fusion quickly pointed out that the experiment was not done properly: one needed different size palladium cathodes, longer electrolysis times and higher currents, they claimed.

Whenever the inability of qualified scientists to repeat an experiment is met by ad hoc excuses, beware. One important role of a scientific article is to provide directions for others.

Scientists establish priorities for their discoveries by publishing a clear and well documented recipe of their experimental procedures. If a scientific article fails to include an adequate recipe which allows a skilled reader to reproduce the experiment, it is a warning that the author's understanding of their work is incomplete.

Cold-fusion proponents introduced new dimensions into the subject of reproducibility in science. Some tried to turn the table on reproducibility by giving irreproducibility a degree of respectability. A second aberration was to assign a different value to experiments attempting replication. Only experiments that obtained some fragmentary evidence for cold fusion were to be taken seriously because it was declared that experiments obtaining negative results required no special skills or expertise. This viewpoint led proponents of cold fusion to invite mainly papers reporting positive results when organizing conferences. Such an aberrant procedure is incompatible with the scientific process and usually is viewed negatively by scientists as well as journalists".

Note that "reproducibility" must go beyond one's own lab. One must produce a set of instructions, a recipe, that would enable anyone in their own independent lab (including the labs of cold fusion skeptics), to produce the same results. If reproducibility only occurs in one's own lab, errors (such as systematic errors) would be suspect. See for example, Little et al.

As a further issue in regard to reproducibility, experimenters who previously found evidence of excess heat, found no evidence of excess heat when better calorimeter equipment was used (see section 2.2 on page 2 of Morrison (IV) (note that such refers to the work at IMRA (Japan))).

Reproducibility of the alleged positive cold fusion results is clearly a critical feature in determining if a disclosure adequately teaches the artisan how to make and use an invention for its disclosed purpose. Accordingly, the logical conclusion when one does not get identical results and/or the results are not reproducible at will in these cold fusion experiments, is that the alleged positive results are not real but instead, they are due to experimental errors, instrumentation errors, misinterpretation of results, etc.

10. Additionally, it is noted that there has been a published Board decision involving "cold fusion":

See Ex parte Dash, 27 USPQ2d 1481, wherein it was held that the examiner did not err in rejecting claims for "cold fusion" of nuclear energy for lack of enablement under 35 U.S.C. 112 and as inoperative and lacking utility under 35 U.S.C. 101, since evidence demonstrating that neither excess heat nor traditional nuclear by products of fusion reaction have been detected by careful researchers conducting experiments under conditions that are highly analogous to applicant's electrolytic cell, and demonstrating relative ease with which erroneous results can be achieved by failing to observe strict experiment-design controls shifted burden of proof to applicants, and applicants failed to produce any evidence to overcome examiner's position.

There has also been a decision by the U.S. Court of Appeals Federal Circuit on an application involving "cold fusion".

See In re Swartz, 56 USPQ2d 1703 wherein it was held:

Claims in application that fail to meet utility requirement because invention is inoperative will also fail to meet enablement requirement because person skilled in art cannot practice invention, since application, in order to satisfy enablement of 35 U.S.C. §112, must adequately disclose claimed invention so as to enable person skilled in art to practice invention at time of filing without undue experimentation, and since utility requirement of § 101 mandates that invention be operable to achieve useful results.

U.S. Patent and Trademark Office properly rejected application claims directed to "cold fusion" process for lack of utility and enablement, since PTO provided substantial evidence that those skilled in art would reasonably doubt asserted utility of claimed invention, and found that applicant had not submitted evidence that concept of invention could have been practiced by person of ordinary skill without undue experimentation, and since applicant's conclusory allegations that PTO's decision on utility issue is not supported by substantial evidence, or that its conclusion of lack of enablement is incorrect as matter of law.

11. There were no arguments drawn to the rejection of Claims 4 and 5 under 35 USC 103 (a).

Specification

12. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The specification is objected to because the disclosed invention lacks patentable utility. Although applicant's invention may be operable if the combination of the directly stimulating means were used in combination with the indirectly stimulating means (specification; page 15, lines 22-23), applicant elects the indirect stimulating means (which is stated to enable low energy nuclear reactions (LENR)) alone. LENR in this system lacks credibility in view of the over all situation with regard to the production of cold fusion (LENR). The 2004 DOE review on Cold Fusion (reference attached) found the claims that D-D fusion occurs spontaneously when deuterium is introduced into Palladium metal unconvincing, which was also the case in the 1989 DOE review (also attached). Specifically, Reviewer #10 (2004 DOE Report, page 21-22) found the production of cold fusion during electrolysis in a calorimeter, based on the prior art, to be unconvincing due to the complicated system, measurement difficulty and sufficiently small effects. Even the more positive reviews, such as that by Reviewer 11, find that palladium electrolysis, by which cold fusion occurs, is inconclusive noting the lack of consistency of "excess heat" and reproducibility.

Fukai casts doubt on the occurrence of cold fusion induced by tunneling through

the Coulomb barrier (Introduction, paragraph 2, lines 4-8) stating that there is no way to sustain such close D-D pairs in any solids (page 269, paragraph 4, lines 1-2) (See also page 271, paragraph 4, lines 1-2).

Shanahan questions the conclusion of apparent "excess heat" from cold fusion due to possible recombination considerations at the electrode in an electrolytic cell. Shanahan suggests that in the absence of definitive data ruling out recombination as the source of the apparent "excess heat", the conclusion that cold fusion is the cause the said "excess heat" is premature (Abstract). Applicant's disclosure does not provide insight or analysis into why recombination at the electrode is not the cause of the alleged "excess heat" production.

In light of the recent DOE review conclusions, numerous other references which are skeptical of the occurrence of LENR in condensed matter, and the lack of quantitative or qualitative data in the instant application, the disclosed invention is presently considered to be inoperable and; therefore, lacks utility. As Reviewer #1 stated in the 2004 DOE review, "Extraordinary results require extraordinary proof. Such proof is lacking".

13. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

14. The specification is objected to under 35 U.S.C. 112, first paragraph, as failing to adequately teach how to make and/or use the invention, i.e., failing to provide an

adequate written description. While the specification discloses types direct excitation means, it fails to explicitly disclose what the indirect excitation means is. Without said information, it would be impossible for one of ordinary skill to make or use the invention.

The disclosure also fails to provide:

- a. quantitative requirements as to the amount of heat necessary to cause the phase change of the fluid (i.e. thermal requirements);
- b. whether or not continuous heating of the nozzle is required to sustain the phase change at the exhaust;
- c. how or by what method the indirect excitation means enables, supports, or encourages LENR;
- d. the D/Pd atom ratio (Reviewer #6 on page 11, paragraph 5 of the 2004 DOE Report states that a D/Pd atom ratio of .89 is the threshold for "excess heat" and Sakamoto et al., Abstract, lines 24-28 discloses that below a D/Pd ratio of .85 calorimetric data determined that "excess heat" beyond that which is expected from the chemical reaction is not supported."
- e. calibration procedures
- f. evidence of reproducibility
- g. data suggesting the presence of D-D fusion products (e.g. excess tritium, neutron bursts, helium-3) after the alleged excess heat was produced.

In view of the above considerations, the lack of utility and adequate written description, the specification would require one of ordinary skill in the art to perform

undue experimentation in order to practice the invention. Therefore, the specification is also objected to under 35 U.S.C. 112, first paragraph, as failing to adequately teach how to make and/or use the invention, i.e., failing to provide an enabling disclosure.

(A) The breadth of the claims require experimentation to determine if the energy claimed to be transferred into the nozzle actually heats the nozzle (through LENR) and if the heat, if it were to exist, is sufficient to induce a phase change of the fluid;

(B) The nature of the invention is achieving low energy fusion reactions in condensed matter, in order to generate heat, in much the same way as Fleischmann and Pons claimed to do in 1989;

(C) The state of the prior art is such that since 1989 researchers have been attempting reproduce the results of Fleischmann and Pons (e.g. LENR), but after decades of research and minimal progress, the 2004 U.S. DOE Cold Fusion report concludes that prior art is inconclusive and/or unconvincing.

(D) The level of ordinary skill in the art is not adequate to perform hot fusion, but not cold fusion, especially in a repeatable manner (see 2004 DOE final report, page 3, paragraph 4, lines 12-14);

(E) The level of predictability in the art is nil. It is known that fusion reactions are capable of occurring under certain circumstances and when they do, at least some heat is produced. However, the D-D fusion reaction suggested for producing heat in the instant application is inconclusive. In fact, the products (helium above background levels and fusion products (e.g. neutrons, tritium, etc.)) of the D-D reaction are usually not or never present after heat from a cold fusion reaction is reported to be present (2004 DOE report; page 3, paragraph 4, lines 1-6 and 1989 DOE report; page 1: paragraph 2, lines 6-9).

(F) The amount of direction, or lack thereof, provided by the inventor in the disclosure omits information essential to the utility and/or manufacture of the claimed invention (i.e. an example of an indirect excitation means, how the indirect excitation means functions to enable LENR, temperatures requirements, etc.);

(G) The inventor has not provided any working examples indicated by a precise description or quantitative or qualitative data;

(H) The quantity of experimentation needed to make or use the invention based on the content of the disclosure would require at least significantly more research into the material science aspects of deuterated metal, as suggested in the 2004 DOE report (page 5; paragraph 4, lines 4-6). In fact, as stated in the 1989 DOE report (page 3;

paragraph 5, lines 1-3); making or using this invention would require the invention of an entirely new nuclear process.

On the basis of consideration (A)-(H), it is concluded that the disclosure fails to provide enablement (*In re Wands* 858, F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Circuit 1988)).

Claim Rejections - 35 USC § 112

15. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

16. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

17. Claims 4-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The reasons for this rejection are the same as the reasons for the objection to the specification for lack of enablement as given above.

18. Claims 4-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The reasons for this rejection are the same as the reasons for the objection to the specification for lack of enablement as given above.

19. Claims 4-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. As a result of the claims lacking written support and enablement, they are vague and ill-defined in their metes and bounds; therefore, rendering them indefinite.

Claim Rejections - 35 USC § 101

20. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

21. Claims 4-10 are rejected under 35 U.S.C. 101 because the disclosed invention is inoperative and therefore lacks utility. The reasons for this rejection are the same as the reasons for the objection to the specification for lack of utility as given above.

Claim Rejections - 35 USC § 103

22. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

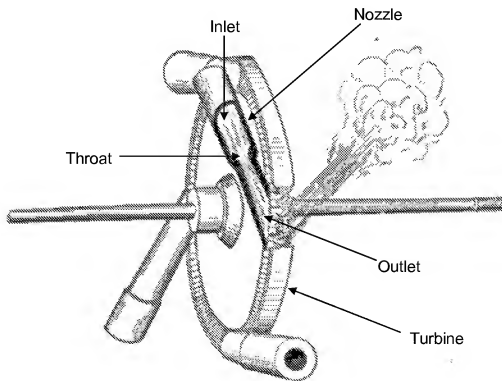
23. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steam Turbines, Practice and Theory (herein after "Gray French") in view of U.S. Patent No. 5,632,871 (herein after "Patterson").

24. Regarding Claim 4, Gray French teaches a system comprising a nozzle having an inlet, a throat, and an exhaust (see figure below); a fluid flowing through the nozzle; and a means (i.e. turbine) for transforming the flow from the exhaust into work outside the system. Gray French fails to teach a means embedded within the nozzle for transferring energy into and heating the nozzle, thereby indirectly transferring energy into and heating the fluid and inducing a phase change in the fluid. Patterson teaches a means 38/44/36 embedded within a nozzle 12 for transferring energy into and heating the nozzle 12 (column 2, lines 15-17); thereby indirectly (through means 36) transferring energy into and heating the fluid and inducing a phase change in the fluid (column 3, lines 59-60).

A motivation for indirectly supplying energy to the fluid in the manner above described is to form the necessary electrolytic current flow path between the cathode 38

and anode 44 (U.S. Patent No. 5,318,675; Patterson, column 5, lines 56-59). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to embed said means 36 in the nozzle 12.

25. Regarding Claim 5, Gray French teaches a system wherein the cross-sectional interior volume of the inlet, throat, and exhaust of the nozzle vary only across one plane perpendicular to the axis of the fluid flowing through the nozzle (see figure below).



Gray French; Figure 1, page 67

Conclusion

26. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erin M. Boyd whose telephone number is (571) 270-5378. The examiner can normally be reached on Monday - Friday 9:00-6:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/E. M. B./
Examiner, Art Unit 3663

/Jack W. Keith/
Supervisory Patent Examiner, Art Unit 3663